



The Environmental Scenario Generator

**Steve Lowe
SAIC**

Steven.J.Lowe@saic.com

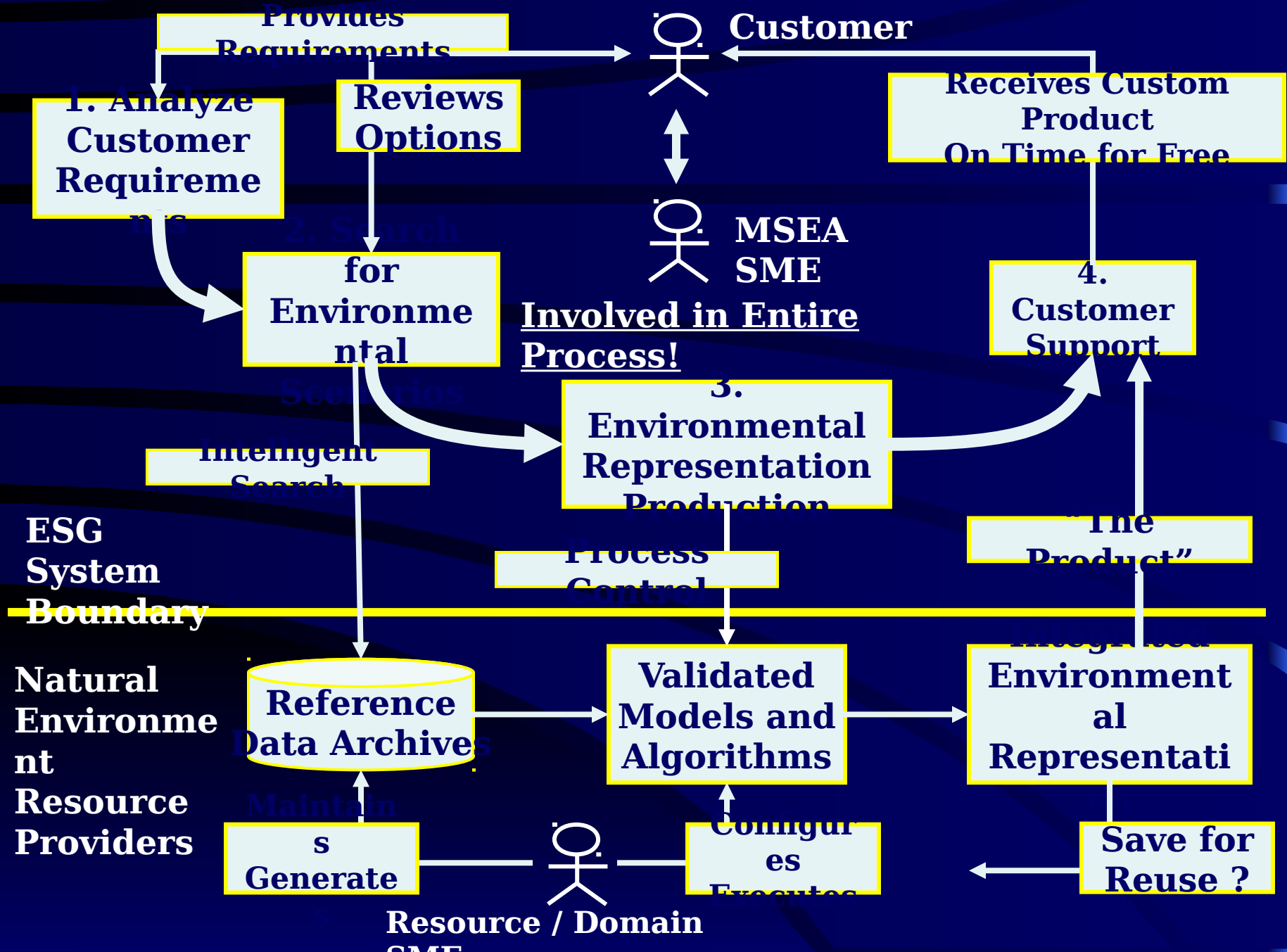
The Environmental Scenario Generator

- **The ESG project and system of technology and resources is principally about the specification, generation, and provision of the natural environment portion of the simulation scenario**
 - **A natural environment scenario is a specification of some sequence of environmental conditions in which the mission must be accomplished**
 - **The objective capability is to provide readily usable environmental representations that will effect the simulated entities, and therefore the simulation outcome, in a realistic manner**

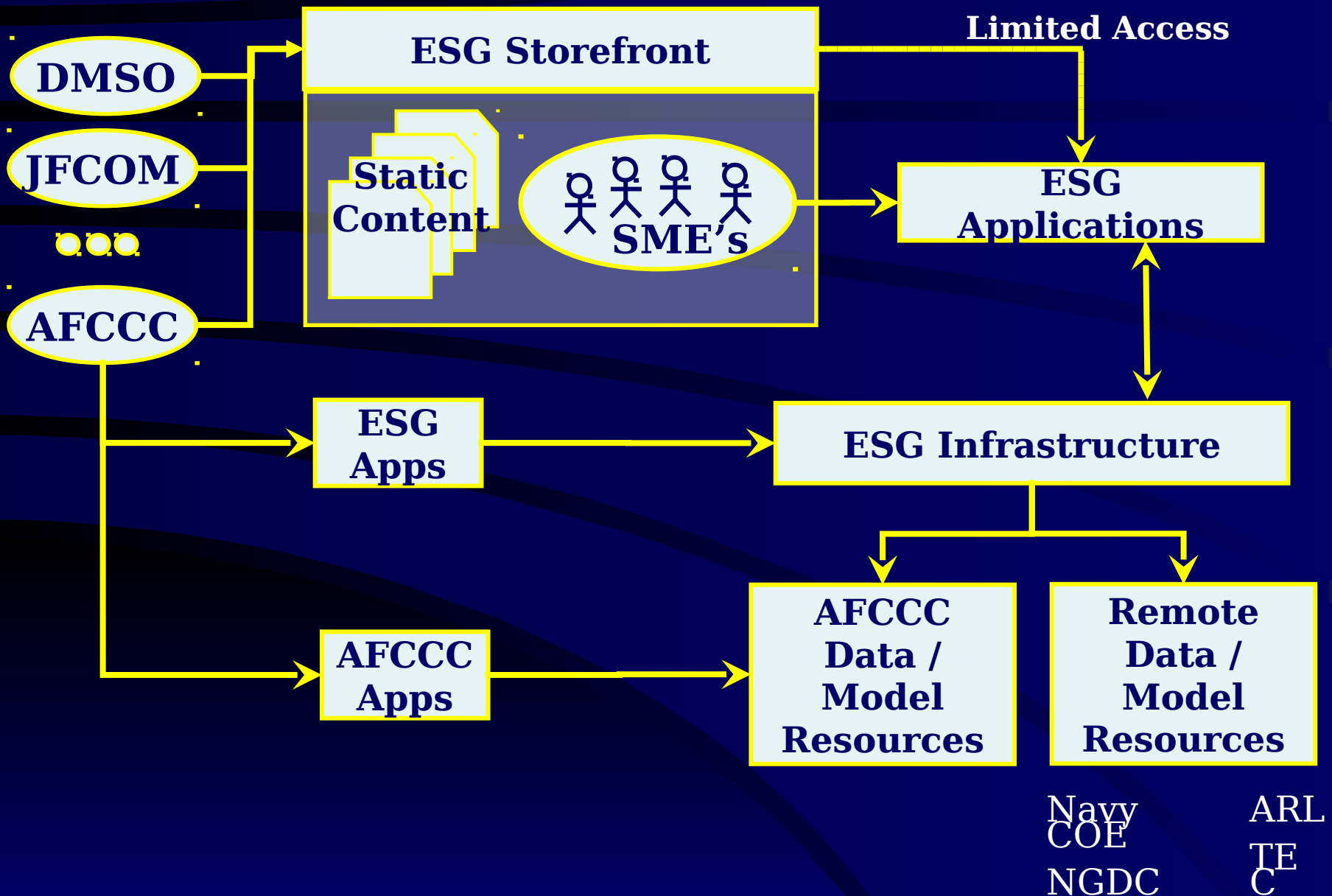
ESG Functional Requirements

- **Analyze Customer Requirements**
 - Capture and understand simulation objectives
 - Analyze fidelity and behaviors of simulation entities
 - Compose environmental scenarios
- **Scenario Search Mechanism**
 - Rapidly search archives for events of interest
 - Analyze candidate events in detail, relative to simulation objectives
- **Produce Integrated and Consistent Environmental Data**
 - Access mechanisms for data archives
 - Model execution in sequence required for domain consistency
 - Customized post-processing and packaging per simulation

The ESG Customer Support Process, based on the INEARP



ESG Conceptual Architecture at AFCCC



ESG Applications

- **ESG Build 5.0 Web Application**
 - **Metadata Catalog Query and Browse**
 - **Scenario Searching**
 - **Resource Ordering / Tracking**
 - **Provides complete MEL functionality with addition of ESG Mining**
 - **Foundation for more to come ...**
- **FDR Browser**
 - **Web-based data analysis capability for all FDR data types**
 - **Functionality depends on data type**
- **Wizard-Based Customer Requirements Module**
- **Independent Java Applet for Resource Query, Browse, Order**
- **Desktop Data Query Tool**
 - **Web launchable Java application to inspect ESG produced CSV files**
- **FDR-enabled Integrated Data Viewer [NGDC]**
 - **Java Webstart visualization capability based on UW's VISAD**

ESG Infrastructure

- **Metadata Schema and Catalog Server**
 - **Uniform representation of data and models**
 - **Virtual Resources based on resource dependencies**
- **Five Dimensional Representation (FDR) Data Server**
 - **Application level Spatial Grid, Time Series, Profile data object**
 - **Java RMI / Web Service based Server for distributed data flow**
 - **Many utilities for data transformation and processing**
 - Now includes the fuzzy-logic search engine !!
- **Process Control Architecture**
 - **Order Server for top level order management**
 - **Request Handler (RH) Server for remote order processing**
 - **Flexible Service Performers based on FDR data access**
 - **Delivery Server for final packaging and customer data access**

ESG Status

- **Build 5.0 Infrastructure is robust and in use since May '04**
- **Build 5.0 Web Application delivered to ASNE and undergoing final review**
 - **Expect final deployment this month**
- **Build 5.1 Development underway**
 - **Many minor improvements/fixes to infrastructure**
 - **Web Application to gain**
 - Scenario Searching by Weapons Effects / Weather Events
 - Integrated GIS map services
 - Project Tracking
 - **Expect final deployment of Build 5.1 in January '05**
- **Continue to struggle with Systems related issues at AFCCC**
 - **Updated Systems Architecture provided this month**
 - **New hardware on the way**
 - **Expect "full-up" status by October**

ESG Resource Development

- **Initial ACMES and COAMPS JIT capabilities in place**
- **NCEP/NCAR Archive expanded 1951 - 2003**
- **ACMES 40-km “Global” 10-Year Archive delivered**
- **Space Weather Resources**
 - **5-Year derived indices archive**
 - **11-Year “raw” indices archive**
 - **Flat-File based ordering of global GITM and AMIE data sets**
- **Ocean Resource expected in October '04**
 - **10-Year Global MODAS Archive**
 - **13-Year Global WaveWatch3 Archive**
- **Expect all of the above fully accessible from Build 5.0 by EOY**
 - **Must resolve systems issues**
 - **Must finalize Build 5.0 Web Application deployment**
 - **Begin web-based testing of resource access**

ESG Transition by Domain

